

**FIRE PROTECTION PLAN
FOR
NEUMANN MINOR SUBDIVISION
TPM 20962**

PREPARED FOR:

**County of San Diego
Department of Planning and Land Use
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&

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1.0 INTRODUCTION

The proposed project includes a minor subdivision. The project site is located in the east Community of Ramona, and north of Highway 67 in the County of San Diego County (Figure 1). The project is accessed by Ramona View Drive (Figure 2). The property includes Assessor Parcel Numbers (APN) 280-130-03. The project proposes to subdivide 39.4 acres into 4 parcels. The proposed lot size ranges from 14.1 to 4.7 acres. Additionally, the project proposes a 22.2 acre biological open space easement along the northern and eastern property boundary.

The purpose of this Fire Protection Plan (FPP) is to meet the requirements of the Ramona Fire Prevention Bureau and County of San Diego regarding fire safety in the Wildland/Urban Interface for the Neumann Subdivision, TPM 20962. The primary purpose of the revised Fire Plan is to address conformance Ramona Ordinance 07-338 which was adopted subsequent to the original version of the fire plan, the County of San Diego Fire Code which has been amended since the original version of the fire plan and compliance with Title 14 of the California Code of Regulations regarding secondary access.

The following Fire Protection Plan addresses water supply, access, building ignition and fire resistance, fire protection systems and equipment, defensible space and vegetation management in accordance with the requirements of the County Fire Code and Ramona Fire District Codes 07-338 and 07-339. When developing mitigation measures the location, topography, geology, flammable vegetation and climate were taken into consideration.

The project is designed in conformance and meets or exceeds all applicable codes and standards with the exception of the requirement for secondary access. Mitigation measures have been proposed that meet the intent of Appendix Chapter1, Section 104.8. Mitigation measures include increased road width, turn outs, additional water supply for Parcel 3 and increased fuel management. In conformance with current code and ordinance requirements the structures shall be constructed using Ignition Resistant Construction Type 2 and install residential fire sprinklers.

2.0 SETTING AND FIRE HISTORY

Structural and wildland fire protection is provided to the project area by the Ramona Fire Prevention Bureau, a cooperation between the California Department of Forestry and Fire Protection and Ramona Municipal Water District. In addition it is located within a State Responsibility Area (Figure 3). The western portion of the project site is located in an area of highly flammable vegetation as depicted by the California Department of Forestry

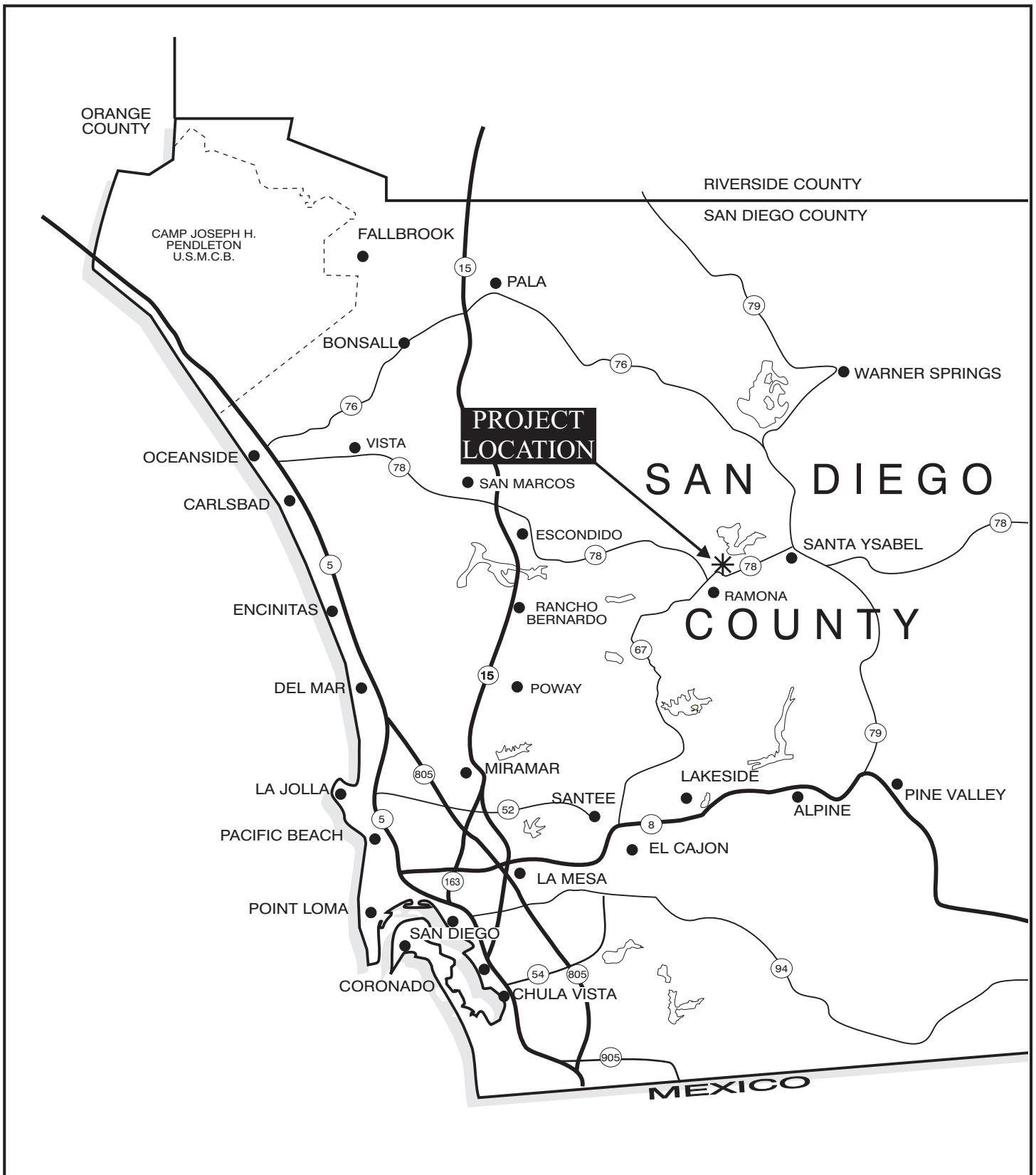
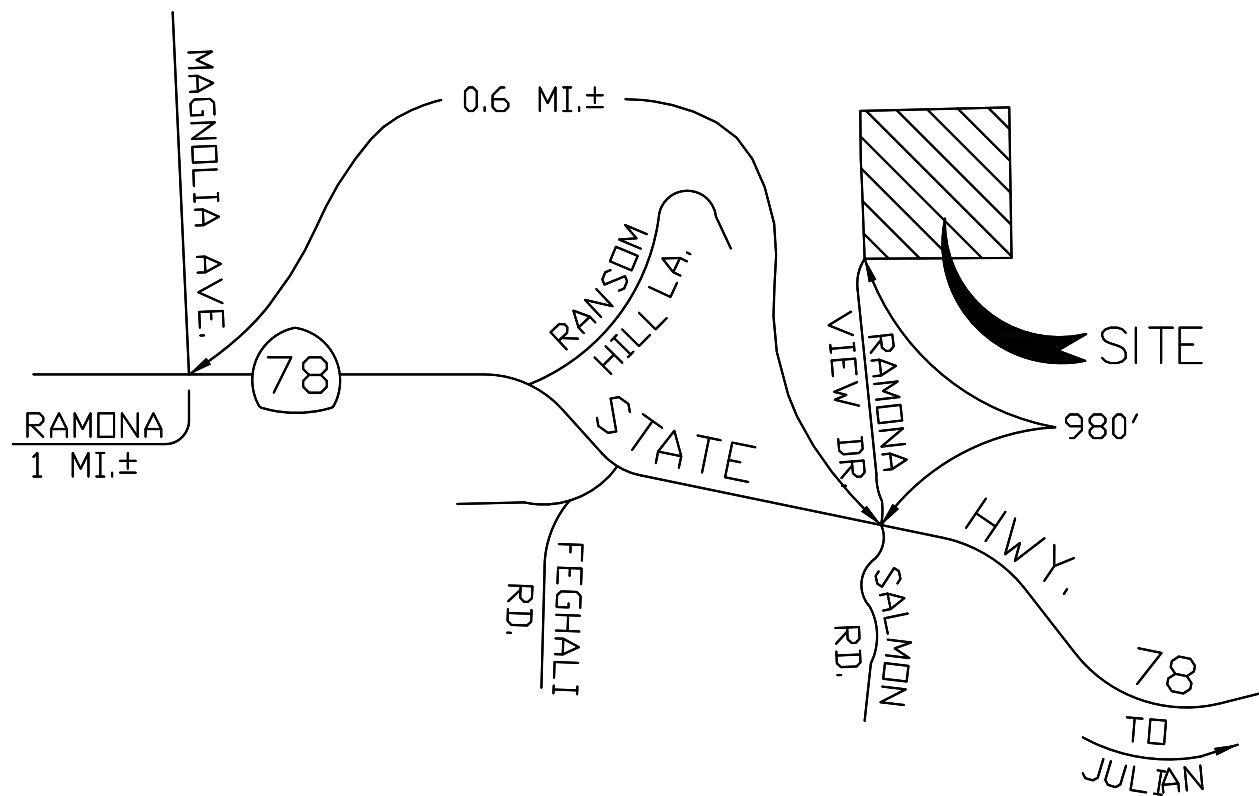


Figure 1
Regional Location Map





VICINITY MAP

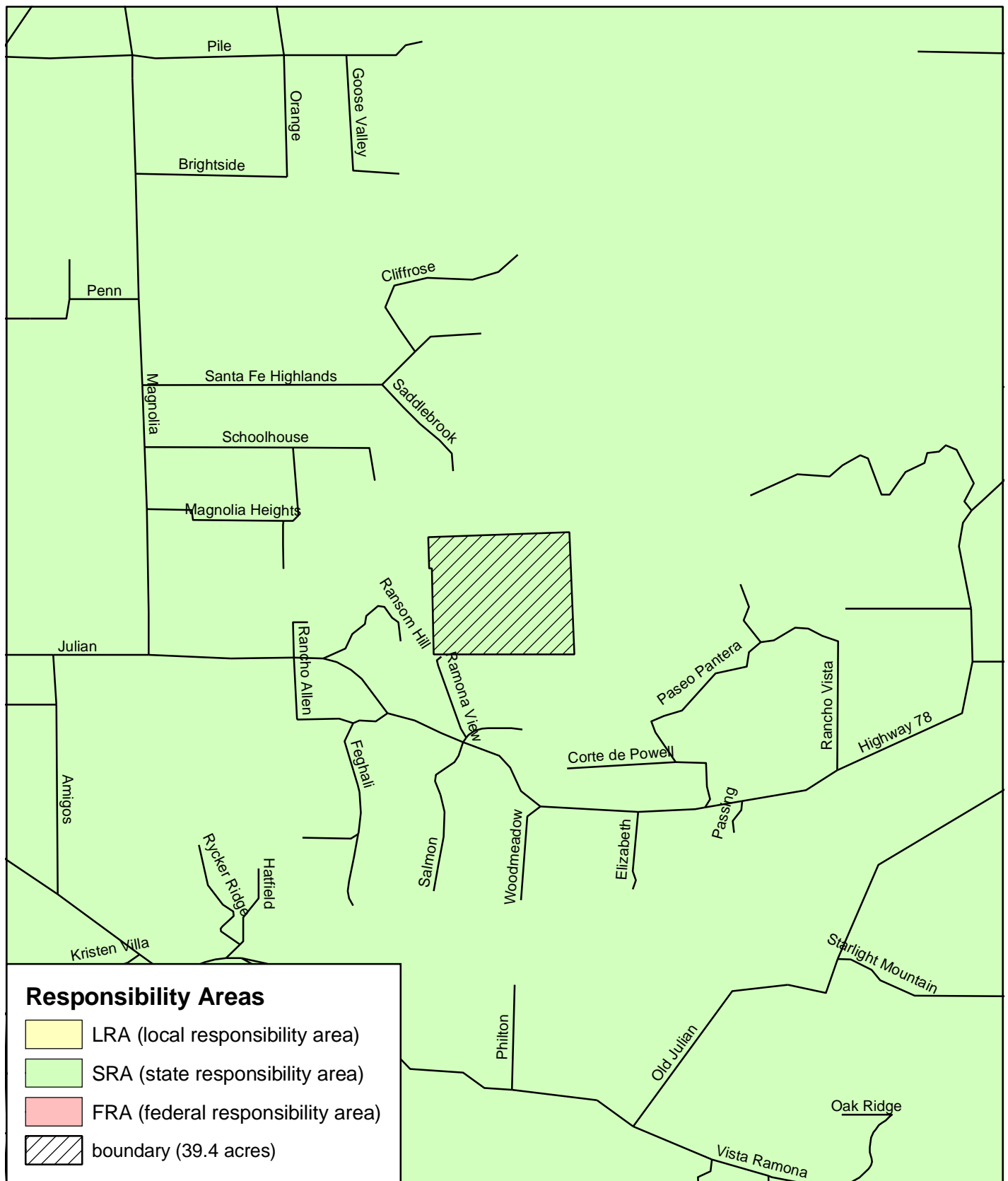
NO SCALE
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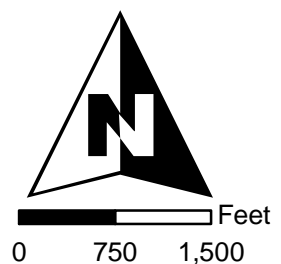
Vicinity Map

Figure
2



Source: <http://frap.cdf.ca.gov/>

Figure 3
State Responsibility Area Map
Neumann Property



Fuel Threat map (Figure 4). The northern and eastern portion of the project is located in an area of very highly flammable vegetation. The southern portion of the project site is located in an area of moderately flammable vegetation. The following sections discuss the surrounding land use, topography, vegetation, climate, and fire history.

2.1 Surrounding Land Use and Topography

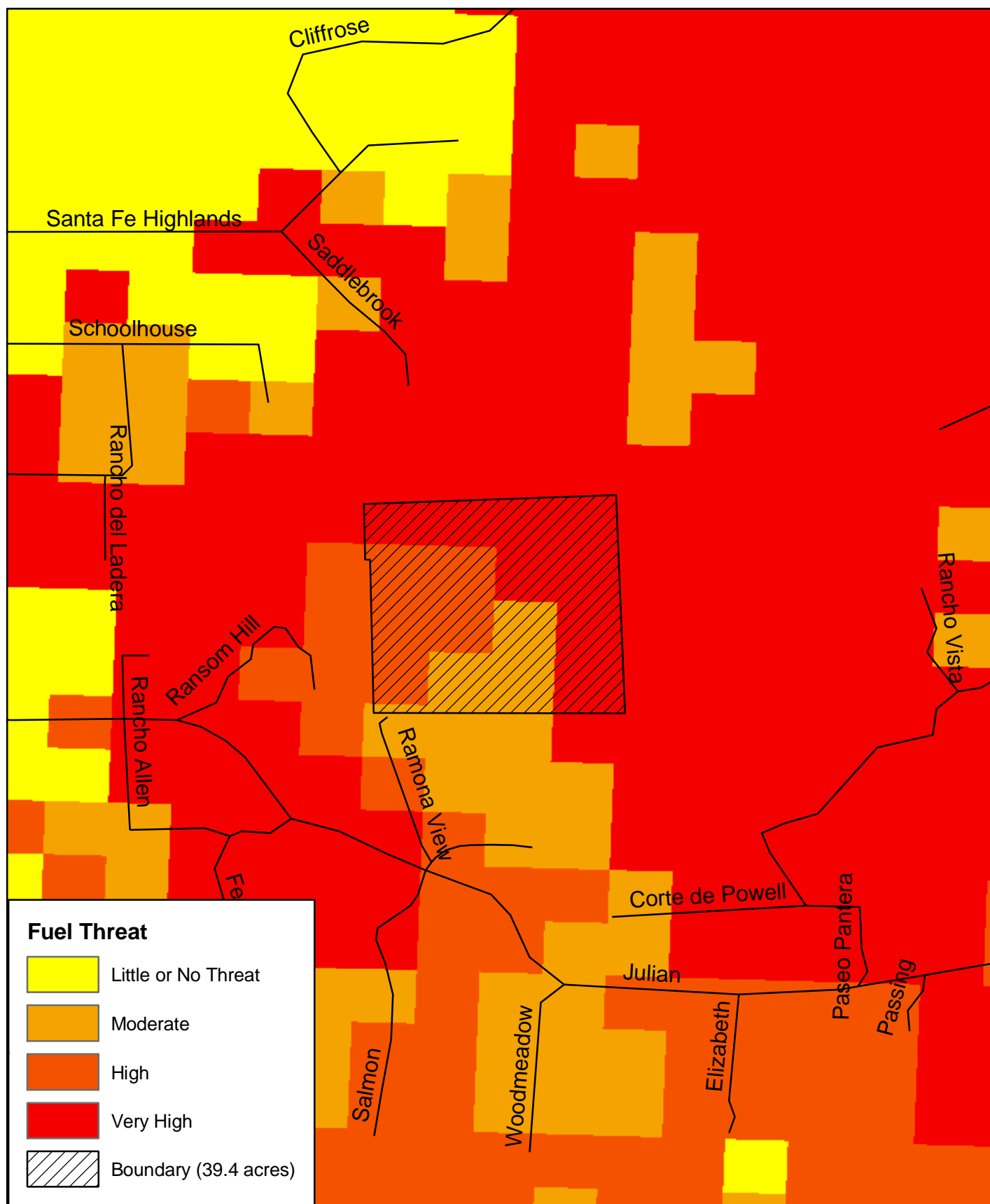
The project site is surrounded by undeveloped land to the north, east and southeast. Rural residential single family homes occur to the west and southwest of the project (Figure 5). The proposed development area on the site is generally the higher elevation to the northwest and center of the parcel (Figure 6). The project contains two southwest facing canyons in the southeastern portion of the property along the northern boundary of parcel 2 and one just north of the proposed pad in parcel 4.

2.2 Vegetation

The project site contains two native plant communities, coastal sage scrub and chamise chaparral. Eucalyptus woodland and urban/developed land also occur on site (Figure 7 – Biological Resources Map). As can be seen in Figure 7, part of the native habitats are being retained within open space where it is adjacent to undeveloped land (Figures 8 and 9). The photographs accurately represent what the mature habitat onsite was prior to the Witch Fire and what it is expected to return to.



Figure 8. Looking east of the proposed pad in parcel 3 through chamise chaparral.



Source: <http://frap.cdf.ca.gov/>

Figure 4
Fire Threat Map
Neumann Property

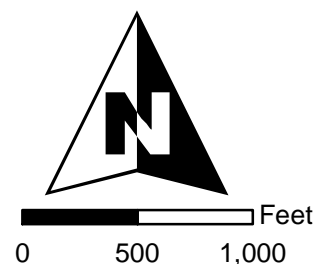


Figure
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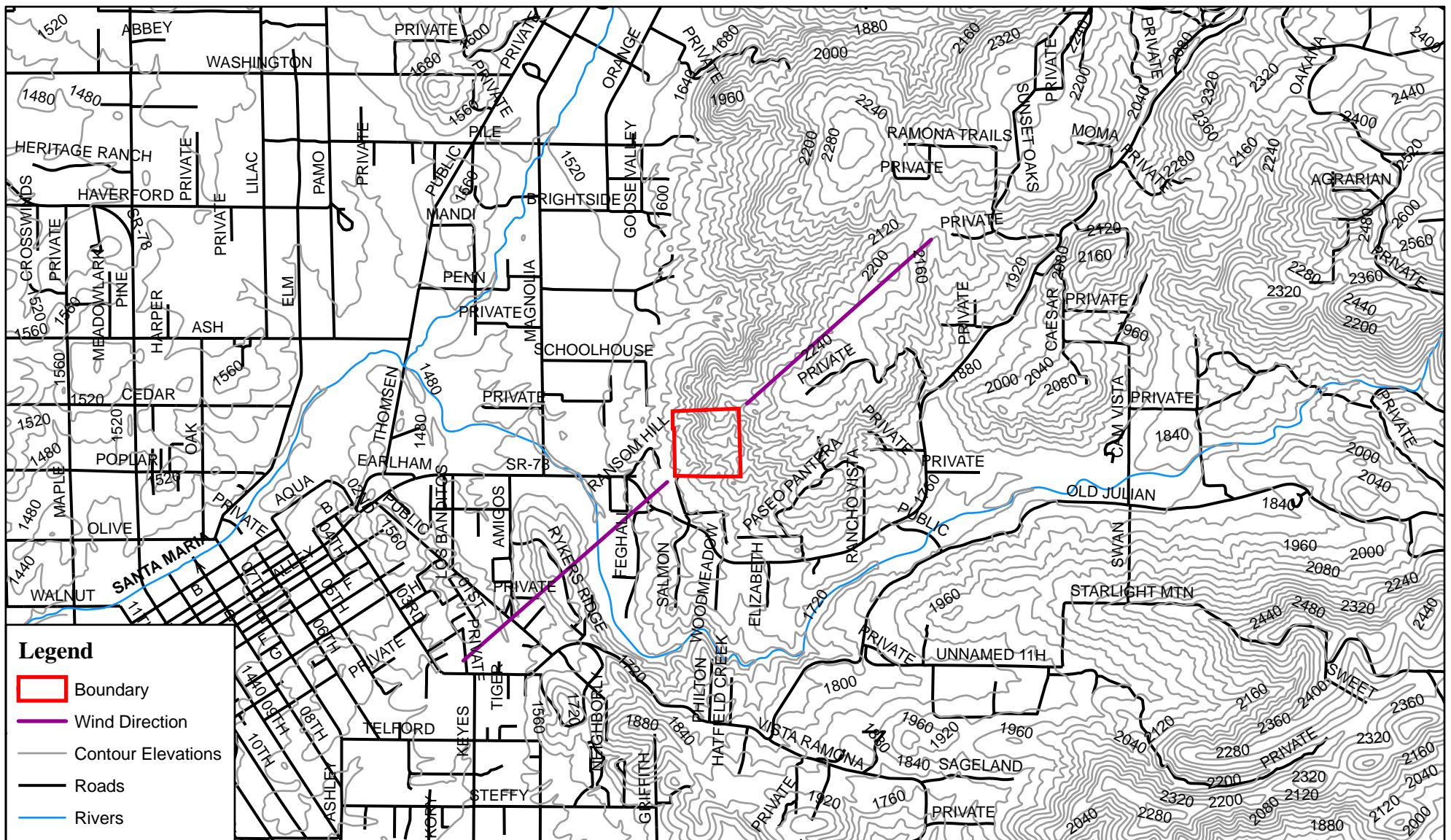
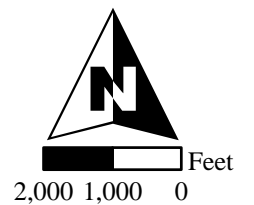







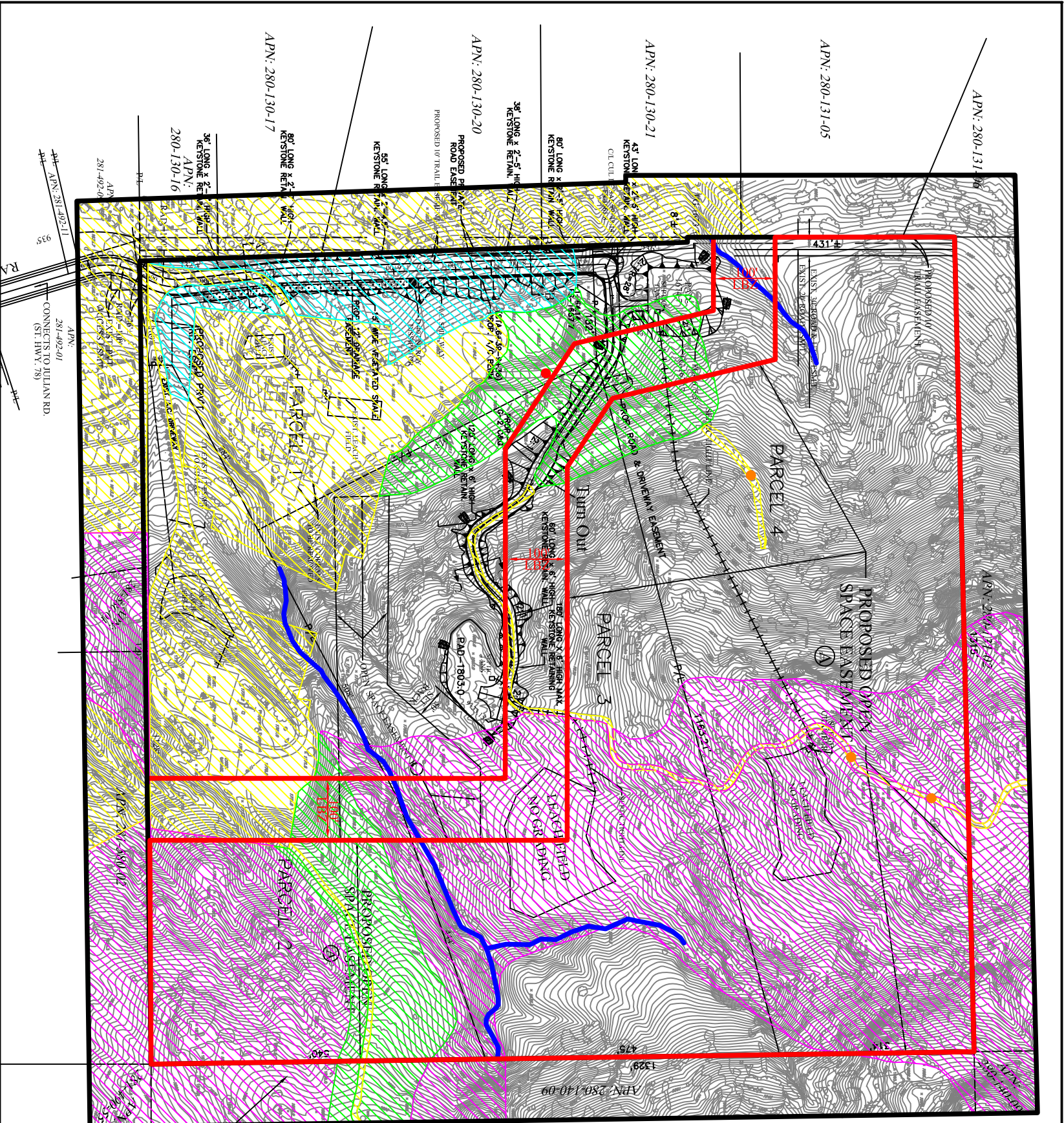


Figure 6
Contour Map
Neumann Property



Legend:

- | | |
|---|---|
|  | Inland Coastal Sage Scrub (15.16 acres)
Habitat Code: 32520 |
|  | Inland Coastal Sage Scrub- Disturbed (3.69 acres)
Habitat Code: 32520 |
|  | Chamise Chaparral (12.68 acres)
Habitat Code: 37200 |
|  | Eucalyptus Woodland (1.66 acres)
Habitat Code: 11100 |
|  | Developed (6.21 acres)
Habitat Code: 12000 |
|  | Ephemeral drainages
CDFG Jurisdicional |
|  | Coastal Western Whiptail
(<i>Cnemidophorus tigris multiscutatus</i>) |



RC

Biological Consulting, Inc.

Biological Resources Map for the Neumann Property

TPM 20962

August 2008

Figure





Figure 9. Looking north off the proposed pad in parcel 3 with coastal sage scrub to the west of the disturbed road and chamise chaparral to the east.

2.3 Climate

As defined by the National Weather Service, San Diego has four climate zones: coastal, inland, mountain and desert climate. These climate zones are determined by several factors: proximity to the ocean, terrain, elevation and latitude. Using the Koppen system, the metropolitan areas of Southern California have a Mediterranean climate, characterized by mild, sometimes wet winters and warm, very dry summers. The Mediterranean climate includes all coastal areas, valleys and foothills. Annual precipitation amounts increase gradually from the coast to the mountain crests, then drop dramatically into the deserts. Most precipitation comes from winter storms between November and March. The site is located within the foothills and valleys. Average rainfall is 15 inches per year.

2.4 Fire History

The fire history of the site and surrounding area was reviewed. The source of the fire history information is the California Department of Forestry Fire and Resource Assessment Data from 2005. The data include most large fires since 1910 however smaller fires may not be mapped. The data indicate that the most of the site burned in fires before 1970. Other fires occurred in the area in 1973, 1979, 1981, 1987, 1990, 1994, 1996 and 2003 (Figure 10). Subsequent to the original version of the Fire Plan, the site burned in the Witch Fire in the fall of 2007.

3.0 WATER SUPPLY

Water will be supplied by the Ramona Municipal Water District once the project has annexed into the District (Appendix A). The Ramona Fire Prevention Bureau letter, dated September 29, 2005, requires a water line extension for the purpose of installing a fire hydrant at the end of the 40 foot easement on parcel 4 to serve both parcel 4 and 3 (Appendix B). The system shall be capable of supplying a minimum fire flow of 2500 gallons per minute at 20 psi while operating multiple hydrants at a time. All components must meet the approval of the Ramona Fire Prevention Bureau. Fire hydrants will be of a type and design acceptable to the Fire District and will have one 4 inch and two 2 1/2 half inch outlets.

In addition a 10,000 gallon storage tank shall with a 4 inch Fire Department Connection shall be install on the pad on Parcel 3. The tank shall be tied to the fire sprinkler system for the home on Parcel 3. A covenant shall be recorded not to sell or build on Parcel 3 until the storage tank and Fire Department Connection are installed. This additional requirement is being performed to mitigate for the lack of secondary access as discussed in Section 4.0.

4.0 ACCESS AND TRAVEL TIME

The following sections discuss access requirements and travel time.

4.1 Primary Access

Access will be provided by a paved, all-weather road, Ramona View Drive, from Julian Road (State Highway 78). Ramona View Drive is an existing road from the intersection of Julian Road north to the southern property line where it becomes a driveway that serves the previously existing homes on the property. As illustrated in the Off-site Road Exhibit (Figure 11) the off-site portion of Ramona View Drive shall be graded to 32 feet in width and paved to 24 feet in width. Additionally a turnout is proposed on the left side of the road approximately 450 feet north of the intersection with Julian Road (Figure 11).

As can be seen in the preliminary grading plan (Map Pocket) the onsite access road is proposed to be graded to a minimum of 28 feet in width and improved to a minimum of 24 feet. The road terminates in cul de sac just north of the property line for Parcel 4. The cul de sac has a 36 foot radius in conformance with the District requirements. A driveway that provides access to Parcel 3 and partial access to Parcel 4 is proposed to be improved to 20 feet in width. Minimum required driveway width is 16 feet. The driveway to Parcel 3 has a turn out on the north side approximately 350 east of the cul de sac and 400 feet west of the proposed pad. The increased width and turn out is to serve as a mitigation measure for the lack of secondary access.

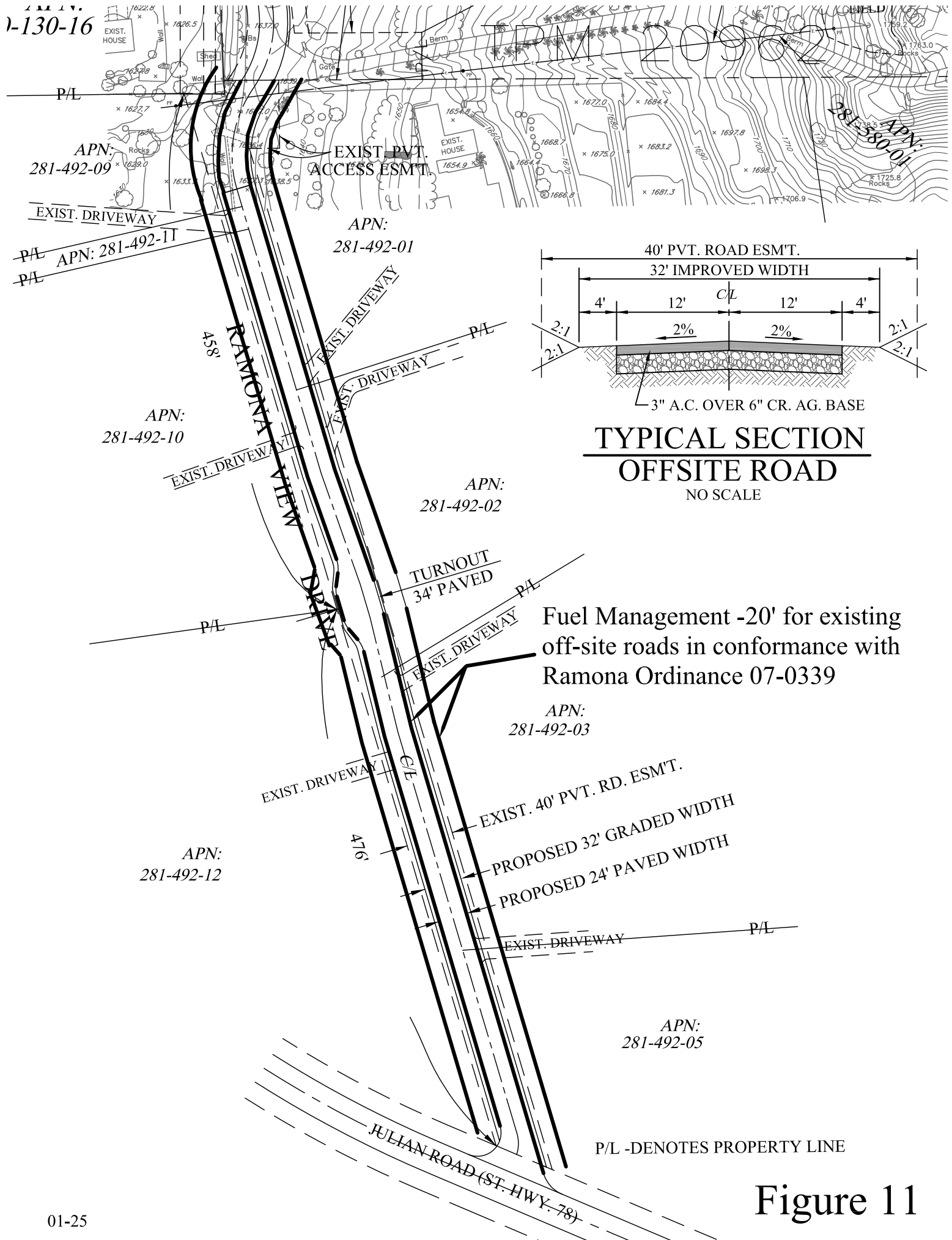


Figure 11

The access shall be paved and support imposed loads of fire apparatus in conformance with the County of San Diego Fire Code (County 2008) and Ramona Ordinance 07-338. The District Ordinance requires that the road be able to support imposed loads of 75,000 lbs which exceeds the requirement within the County of San Diego Fire Code of 50,000 lbs. Parking will not be allowed on either side of the road. Both sides shall be posted as a designated fire lane.

All roads with a grade of greater than 15% shall be paved with Asphaltic Concrete with a brush finish.

Road maintenance shall be the responsibility of the property owners as designated with the County Tax Assessor. Maintenance shall be ensured through a shared road maintenance agreement.

4.2 Secondary Access

The cumulative dead end road length from the furthest proposed structure on Parcel 3 to the intersection with Julian Road is approximately 2560 feet. Section 503.1.2 of the County Fire Code, Ramona Ordinance 03-338, and Title 14 of the California code of regulations requires that secondary access be provided when the cumulative dead end road length exceeds the allowable length of 1320 feet for parcels zoned for 1 to 4.99 acres. The fire code official may modify the requirements of this section in an individual case when the criteria in Appendix Chapter 1, Section 104.8 have been met and the modification will fulfill the intent of this section. Secondary access is not available for this project because of developed properties along the western property line and topography (Figure 5).

The intent of road and street networks is to provide safe access for emergency wildland fire equipment and civilian evacuation concurrently and to provide unobstructed traffic circulation during a wildfire emergency. In order to improve the ability of Ramona View Drive to support wildland fire equipment and civilian evacuation a turnout is proposed on the left side of the road approximately 450 feet north of the intersection with Julian Road. The offsite portion of Ramona View Road has also been increased from minimum graded width of 28 feet to 32 feet.

A driveway that provides access to Parcel 3 and partial access to Parcel 4 is proposed to be improved to 20 feet in width. Minimum required driveway width is 16 feet. The driveway to Parcel 3 has a turn out on the north side approximately 350 east of the cul de sac and 400 feet west of the proposed pad. The increased width and turn out is to serve as a mitigation measure for the lack of secondary access. The proposed turnouts allow for unobstructed traffic circulation even with the stationing of fire apparatus.

Parcels 1 and 2, which have homes, are within the allowable cumulative dead-end road length. Only parcels 3 and 4 exceed the allowable length without providing Secondary Access. Fuel Management adjacent to east side of the onsite portion of Ramona View Road has also been increased from a minimum of 30 feet to a minimum of 40 feet

(Section 8.0) (Figure 12). The combined mitigation of the increased width, turnouts and increased fuel management will allow the development to meet the intent of road access to provide unobstructed concurrent access for fire equipment and civilian evacuation.

Additionally as discussed in Section 3.0 – Water Supply, a 10,000 gallon storage tank shall with a 4 inch Fire Department Connection shall be install on the pad on Parcel 3. The tank shall be tied to the fire sprinkler system for the home on Parcel 3. Lastly fuel management adjacent to the onsite portion of Ramona View Road and to the north and east of the Pad on Parcel 3 and elsewhere on the site has been increased from the minimum required. These mitigation measures in combination with the road improvements are to provide the same practical effect of Secondary Access.

4.3 Travel Time

The Public Facility Element of the General Plan for the County of San Diego (as amended) , Section 11 – Fire Protection and Emergency Services establishes goals for the delivery of services. The goal to minimize the loss of lives from fires is identified in the plan as a maximum travel time of 20 minutes for the land use category “Rural” which is defined as large lot single family residential and agriculture with lot sizes of greater than 4 acres. The Ramona Fire Prevention Bureau estimates the travel time to be 5 minutes from the fire station located at 829 San Vicente Road, Ramona (Fire Services Availability Letter – Appendix B). The project meets the goals for travel time set forth in the General Plan.

5.0 ADDRESSES

Addresses shall be placed at appropriate locations and be plainly visible and legible from the street fronting the property from either direction of approach. Said numbers shall contrast with their background and shall meet the following minimum standards as to size: 4 inches high with a 3/8 inch stroke. Address numbers shall also be placed at the end of the driveway where it intersects with the road, to the satisfaction of the Ramona Fire Prevention Bureau.

6.0 FIRE RESISTANCE AND FIRE PROTECTION SYSTEMS

The Neumann Property will be required to utilize enhanced ignition-resistant construction. The requirement is because it is located within the wildland-urban interface and identified as being located with an extreme fire hazard area as defined by Section 502 of the Ramona WUI code (Ordinance No. 2007-339).

Building construction requirements are specified in Chapter 7a of the County of San Diego Building Code. Construction shall meet or exceed these requirements. Construction requirements are also defined within the Fire District’s WUI code. Pursuant

to Table 503.1 of the Fire District's WUI code building construction will have to be Type IR2 which is defined in Section 504. Where there is a conflict between the two codes the County's building code shall take precedence unless the District's code is more restrictive.

Each residence shall have automatic fire sprinkler systems installed per National Fire Protection Association (NFPA) 13-D and the County of San Diego Requirements. Fire sprinkler plans shall be submitted and approved by the Ramona Fire Prevention Bureau prior to framing inspection.

7.0 FIRE MODELING

Several factors were taken into consideration when determining the brush management zone including topography, degree of exposure, lot size, and proximity to biological open space. In addition, the plan was developed with watershed protection and suitability of proposed plant species with regard to adjacency to biological open space as a consideration. Fire modeling was performed using Behave Plus 3.0.1 for three types of weather conditions, a Santa Ana weather condition, a peak weather condition and a summer weather condition. Weather data for the Santa Ana, peak and summer conditions were determined by the Standard Weather Parameters for the Transitional Zone from the County of San Diego Guidelines For Determining Significance and Report Format and Content Requirements for Wildland Fire and Fire Protection. The weather data are included in Appendix C.

The results of the modeling are summarized here and included in Appendix D. Modeling was performed for parcels 3 and 4 where they are adjacent to open space and natural lands. These models would also be applicable to the remainder of the development where the lots are adjacent to open space. Modeling was performed for two different habitat types found adjacent to the lots. Southern California fuel model SCAL 18 (sage/buckwheat) was used to represent the coastal sage scrub to be retained within the open space to the north of parcel 3 and to the north and east of parcel 4. Southern California fuel model SCAL 17 (chamise) was used to represent the chamise chaparral to be retained within the open space to the north and east of parcel 3. Fuel modeling is an estimate of the anticipated fire behavior however actual fire behavior can be more or less extreme.

7.1 Santa Ana Condition

A Santa Ana weather condition is potentially the worst weather for fire. Santa Ana's typically occur from September to May. The fall Santa Ana can create extremely dangerous fire conditions because they are associated with high temperatures, high winds coming from the north/northeast and low humidity. They also occur after long periods of no rain when the vegetation is in a drought stress condition. The soft shrubs that compose habitats such as coastal sage scrub are semi-drought deciduous and have typically lost the majority of their foliage by the end of summer. The hard woody shrubs that compose

chaparral are dormant during this period and have little active growth which results in low fuel moisture.

Fire Behavior

Santa Ana winds result in a wind driven fire. These winds typically come from the northeast. Santa Ana winds are Foehn winds which are warm dry winds that result from air spilling over high elevations and moving downhill. These are gravity winds that typically follow the ground. When gravity winds hit an obstacle they can either split around the obstacle and continue or follow the object to the top and then launch over the top resulting an area behind the obstacle with normal wind conditions. This site is sheltered by the hills to northeast.

There is a high amount of fuel (Figure 9) north and northwest of the project site (Figure 5). Although a fire in a Santa Ana condition would be driven by the wind towards the project site, the site is sheltered by topography that would deflect the wind and the fact that the fire would be burning down hill would reduce the rate of spread of the fire.

Fire Modeling

The weather conditions for fire modeling were determined by the Standard Weather Parameters for the Transitional Zone from the Draft County of San Diego Guidelines For Determining Significance and Report Format and Content Requirements for Wildland Fire and Fire Protection. The weather data are included in Appendix C.

Modeling for parcels 3 and 4 used a 28 mile per hour wind, coming from 45 degrees from the north and a temperature range of 90° to 109° Fahrenheit. The dead fuel moisture used was 3 percent, and the live fuel moisture was 50 percent. This represents a very low moisture scenario which would be most applicable to the time of year Santa Ana's typically occur. The resulting flame lengths ranged from 14.2 to 28.4 feet for both the chamise chaparral and coastal sage scrub models.

7.2 Peak Conditions

Peak conditions are the extreme conditions during a Santa Ana event. The peak winds represent the gusts that occur during a Santa Ana.

Fire Behavior

The fire behavior would be essentially the same as during a Santa Ana, however the gusts could significantly increase the rate or spread and the distance that fire brands travel during the time that they are occurring.

Fire Modeling

The weather conditions for fire modeling were determined by the Standard Weather Parameters for the Transitional Zone from the County of San Diego Guidelines For

Determining Significance and Report Format and Content Requirements for Wildland Fire and Fire Protection. The weather data are included in Appendix C.

Modeling for all of the lots used a 41 mile per hour wind, coming from 45 degrees from the north and a temperature range of 90° to 109° Fahrenheit. The dead fuel moisture used was 3 percent, and the live fuel moisture was 50 percent. This represents a moisture scenario which would be most applicable to peak weather conditions. The resulting flame lengths ranged from 18 to 33.3 feet for both the chamise chaparral and coastal sage scrub models.

7.3 Summer Conditions

Summer weather conditions consist of an onshore flow from the southwest.

Fire Behavior

A fire under summer conditions is typically a fuel driven fire however wind will also contribute to the rate of spread. The site is exposed to winds coming from the southwest by the generally flat topography. The site is partially buffered by development to the southwest affording protection from a wildland fire (Figure 5). However if a fire were to start offsite to the immediate southwest it could follow the small canyon system onsite site and accelerate.

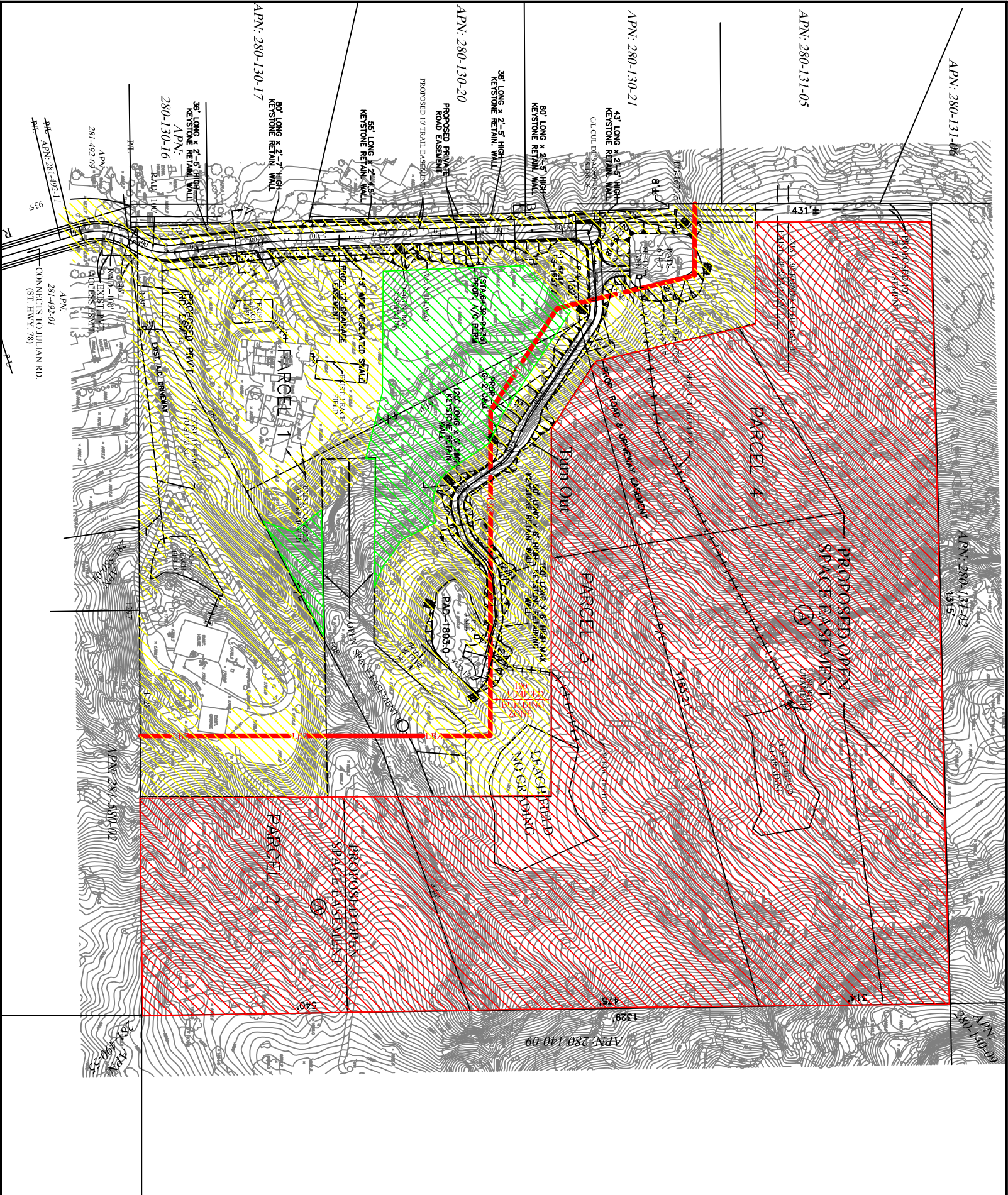
Fire Modeling

The weather conditions for fire modeling were determined by the Standard Weather Parameters for the Transitional zone from the County of San Diego Guidelines For Determining Significance and Report Format and Content Requirements for Wildland Fire and Fire Protection. The weather data are included in Appendix C.

Modeling for parcels 3 and 4 used a 19 mile per hour wind, coming from 225 degrees from the north and a temperature range of 90° to 109° Fahrenheit. The dead fuel moisture used was 3 percent, and the live fuel moisture was 50 percent. This represents a moisture scenario which would be most applicable to summer weather conditions. The resulting flame lengths average less than 26 feet for the coastal sage scrub model and less than 12 feet for the chamise chaparral model.

8.0 FUEL MANAGEMENT

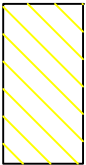
The fuel management zones have been developed as a result of the fire risk analysis for the site. The fuel management zones are described below. The fuel management zones are depicted in Figure 12. This level of fuel management can not ensure that structures will not be lost in the event of a catastrophic fire however in addition to Ignition Resistant Construction techniques it reduces the likelihood. Fuel management zones are depicted in Figure 12.



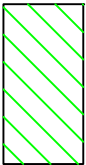
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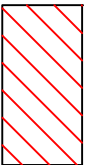
Developed area to be maintained and irrigated



Zone A - A minimum of 100' off of proposed pads, 30' off of roads



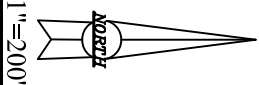
Zone B - The remainder of the lot outside of open space. May be maintained but not required.



Proposed Biological Open Space



100' Limited Building Zone



8.1 Developed Areas

The developed zone on the map is the white area. This area includes the roads, driveways and areas where structures greater than 250 square feet may be built or existing structures to remain occur. This area shall be maintained as described below.

The Developed Zone will consist of landscape plantings that are maintained and irrigated so that they shall not create fire hazards near structures. This area shall be maintained in conformance with Section 604 – Maintenance of Defensible Space of the District WUI Code (Ordinance 07-339). This section includes requirements for plant types, spacing and maintenance.

8.2 Zone A – Adjacent to Development and Road Clearing

Zone A is represented on Figure 11 in yellow. This zone is the closest zone to the developable area. This zone is a minimum of 100 feet adjacent to pads, a minimum of 30 feet from the improved edge of onsite driveways and a minimum of 40 feet for the onsite portion of Ramona View Drive. The minimum fuel management adjacent to new roads is 30 feet in the District code. This has been increased to 40 feet to as a mitigation measure for the lack of Secondary Access. In addition the fuel management zone north and east of the pad on Parcel 3 has been increased to in excess of 175 feet. Other areas of Zone A have been increased to remove slivers of unmanaged habitat as much as possible resulting in an enlarged safety zone.

A fuel management zone of 100 feet provides a fuel management zone approximately three times the largest calculated flame length of 33.3 feet that resulted from the modeling.

This zone for the first 100 feet from the developed area and all of the area adjacent to the roads and driveways shall be maintained the same as the Developed Zone above. The remainder of this zone beyond 100 feet may be maintained by pruning and thinning so that the fuel load is reduced by 50 % and separated. The fire clearing for this zone on each lot shall be implemented prior to bringing combustible building materials onto the site.

8.3 Zone B – Remainder of Lots Outside of Open Space

This area may be fuel managed but is not required to be.

9.0 RESPONSIBILITIES

This section identifies the responsible parties for conformance and implementation of this plan.

Conformance

The ultimate responsibility for conformance with the fire protection plan lies with the property owner as identified on the County Tax Assessors Maps.

Conformance Approval

Conformance approval is under the jurisdiction of the Ramona Fire Prevention Bureau.

10.0 CONCLUSION

The project is designed in conformance and meets or exceeds all applicable codes and standards with the exception of the requirement for secondary access. Mitigation measures have been proposed that meet the intent of Appendix Chapter1, Section 104.8. Mitigation measures include increased road width, turn outs, additional water supply for Parcel 3 and increased fuel management. In conformance with current code and ordinance requirements the structures shall be constructed using Ignition Resistant Construction Type 2 and install residential fire sprinklers.

The project will not expose people or structures to a significant risk of loss, injury, or death as a result of wildland fires. The project will not have a substantial adverse impact to services including response time that would result in physical impacts with environmental effects. The project has adequate emergency access. The project will have sufficient water supplies available to serve the project from the Ramona Municipal Dam Water District. As a result there are no significant impacts pursuant to CEQA.

11.0 LIST OF PREPARERS AND PERSONS AND ORGANIZATIONS CONTACTED

Preparers

Robin Church, President, RC Biological Consulting, Inc. (619) 463-1072

Organizations Contacted

Calvin McVay, Fire Marshal, Ramona Fire District (760) 788-2244

12.0 REFERENCES CITED OR CONSULTED

California Building Code 2007. Chapter 7A.

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Sprinkler Systems.

Ramona Fire District 2007. Fire Code - Ordinance 07-338

Ramona Fire District 2007. Wildland-Urban Interface Code – Ordinance 07-339

Western Regional Climate Center. <http://www.wrcc.dri.edu/>

APPENDIX A
WATER DISTRICT LETTER



RAMONA MUNICIPAL WATER DISTRICT

105 Earlham Street
Ramona, California 92065-1599

Telephone:
(760) 789-1330

October 5, 2005

RECEIVED

OCT 07 2005

County of San Diego
Department of Planning and Land Use
5201 Ruffin Rd., Ste B
San Diego, CA 92123-1666

San Diego County
DEPT. OF PLANNING & LAND USE

**SUBJECT: Agency Recommendation for APN 280-130-03
Case Number: TPM 20962**

Department of Planning and Land Use:

Ramona Municipal Water District will have requirements for water service for APN Number 280-130-03. Water facilities are reasonably expected to become available within five (5) years, if the following conditions are met:

- A. A water commitment agreement is signed by the owner/developer and approved by the District that the owner/developer will assure the district that all actual costs of the facilities required by the project, including, but not limited to, administrative costs, design costs, and construction costs will be paid solely by the owner/developer in a timely fashion. The agreement shall state that the facilities required by the project will need to be completed before any connections shall be made.
- B. Developer shall make a deposit (minimum of \$2,000) with the District to cover all costs for any planning and system evaluation required by the District for addressing the facilities needed to serve this project. The amount of the deposit may vary depending on the project scope and additional deposit may be needed depending on actual costs. System evaluations typically require 4 to 6 weeks to complete. *The Water System Evaluation shall be completed and a Water Service Agreement or Pre-Annexation Agreement executed before the Draft California Environmental Quality Act (CEQA) documents are prepared and before the District will sign a "Project Facility Commitment Form".*
- C. Water availability and commitment letters are based on current ordinances, resolutions, rules, regulations, specifications, and guidelines of the District. *Should these ordinances, resolutions, rules, regulations, specification, guidelines, and system conditions change*

from time to time, the applicant for shall be subject to the requirements in effect at the time of applying for water service.

Sincerely,

Phillip Dauben
Phillip Dauben
Civil Engineer

Cc: File

APPENDIX B
FIRE DISTRICT LETTER

08/17/2008 11:00 AM 100702200
RAMONA FIRE PREVENTION

FILE COPY



RAMONA MUNICIPAL WATER DISTRICT
In cooperation with the
CALIFORNIA DEPARTMENT OF FORESTRY
and
FIRE PROTECTION

105 Earlham Street
Ramona, California 92065-1599

Telephone:
760-788-2244

RAMONA FIRE PREVENTION BUREAU

Project Processing Control Center
Attn: Monica Bilodeau, Project Manager
5201 Ruffin Rd., Suite B
San Diego, CA 92123-1666

August 27, 2008

Re: Neumann Minor Subdivision TPM 20962PRL2
APN 280-130-03
Fire Protection Plan - Accepted

We have reviewed subject Fire Protection Plan (FPP) revised and dated August 2008, prepared by Robin Church, RC Biological Consulting, Inc. for consistency with the California Fire Code Article 86.

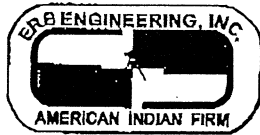
The FPP is generally satisfactory and in compliance with the requirements of CCR T-24 part 9 Article 86, CCR T-14 and this agency's specific project requirements. It is acceptable to the Ramona Fire Department.

Calvin B. McVay
Calvin McVay, Fire Marshal
Ramona Fire Department/Cal-Fire

c: Kevin O'Leary, Division Chief
James Garrett, Battalion Chief
Paul Dawson, Fire Marshal
Robin Church-RC Bio Consulting, Inc
file copy

attachment

cbm



ERB ENGINEERING, INC.
12320 STOWE DRIVE, SUITE E
POWAY, CALIFORNIA 92064
(858) 748-2130 • Fax (858) 748-6089

August 21, 2008

APPROVED

RAMONA FIRE DEPT.

DATE: 08/26/2008 *CBM*

Mr. Calvin McVay, Fire Marshal
Cal-Fire, Ramona Municipal Water District
105 Earham Street
Ramona, CA 92065-1599

Re: TPM 20962 Replacement 2, Neumann
APN: 280-130-03, Ramona Valley Road
Exception to Requirement for Secondary Access

Dear Mr. McVay:

We hereby respectfully request an exception to the requirement for secondary access based upon road way length serving Parcel 3.

Background

The spirit of this Ramona Municipal Water District Ordinance 07-338 and Title 14 is to have longer dead end roads for larger parcels and shorter dead end roads for small parcel sizes due to the densification factor.

This project is at its maximum density and smallest allowable lot size. The project must conform with the Land Use Designation with the General Plan and the Resource Protection ordinance (RPO). As result of the site topography, the application of RPO and the Land Use Designation, the minimum allowable parcel size is 5 acres. The applications of all the regulations result in **the same practical effect** as having a minimum parcel size of 5 acres because the average slope of the land will not permit any of the parcels to be further subdivided. Additionally a large portion of the property is being placed in open space. The RPO works on a sliding scale to minimize the proposed lot size just as the District Ordinance and Title 14 work on a sliding scale to minimize the length of dead end roads.

Project History

Subject property had two existing dwellings and structures on parcels 1 and 2. The dwelling on parcel 1 was a second dwelling. Parcel 2 had the primary dwelling and barn.

Exception

We believe this exception request to Ordinance 07-338 is for just this situation.

The fact that the General Plan and RPO requirements supersedes any minimum lot size arbitrarily stated by the zone designator, results in **the same practical effect** of having a zoning designator for a minimum of 5 acre lot size. See Fire Protection Plan page 14, Section 4.2.

We request the allowable dead end road for this project to be in accordance with the category of 5 acres to 19.99 acres, as listed in said Ordinance, resulting in 2640 feet.


Mitigation

The following mitigation for our exception request will provide the same practical effect of secondary access:

1. We propose a 10K fire tank with 4 inch FDC at Parcel 3 pad.
2. We propose to widen the driveway to parcel 3 to 20 feet wide.
3. Parcel 3 having a driveway off of the Cul-de-sac of 730 feet long, we propose an emergency turnout at 325 feet from the Cul-de-sac and 375 feet from the turn around on the pad. (The total cumulative dead-end length from the pad on Parcel 3 to the highway is 2530 feet, which conforms with the 2640 feet allowance for parcels from 5 to 19.99 acres.)
4. We propose a 10K tank tied to fire sprinkler system for home on Parcel 3.
5. Onsite - The private easement from the southwest corner of the property to the cul-de-sac is 740 foot long, we propose a minimum graded width of 36 feet, a minimum paving of 24 foot wide with a 10 foot wide trail (usable by emergency vehicles) and shoulder. Turnouts will be at 350 to 400 foot intervals.
6. Offsite - The private easement access road from Highway 78 to subject project is 934 feet in length. We propose a 32 foot graded width having a minimum 24 foot wide paved strip, with shoulders and a turn out mid way between the highway and subject property.
7. We propose each pad will have a standard emergency turnaround, restricted from parking.
8. Covenant not to sell or build on Parcel 3 until the tank with the FDC is installed.

Enclosed for your review is a copy of TPM 20962 RPL2. Also enclosed is a draft of the updated Fire Protection Plan which includes the revised grading plan and plat indicating distance from Highway 78 to subject property.

Sincerely,



Donald L. Ayles, President
ERB ENGINEERING, INC.

Enclosures: 2



RAMONA MUNICIPAL WATER DISTRICT
In cooperation with the
CALIFORNIA DEPARTMENT OF FORESTRY
And FIRE PROTECTION

105 Earlham Street
Ramona, California 92065-1599

Telephone:
1-760-788-2244

RAMONA FIRE PREVENTION BUREAU

September 19, 2005

Tim and Christine Neumann
C/O ERB Engineering, Inc.
12320 Stowe Dr. Ste. E
Poway, Ca. 92064
(619) 748-2130
Fax (619) 748-6089

RE: APN# 280-130-03, 18489 Ramona View Dr., Ramona, Ca. 92065

ERB Engineering,

I have reviewed the proposed lot split and the following Fire Department requirements would apply as this project is presented:

1. A water line extension for the purpose of installing a fire hydrant would be called for at the end of the 40 foot easement at Parcel 4 to serve both Parcel 4 and Parcel 3 depending on where the proposed lot sites would be. If the proposed lot sites would be more than 1300' from this hydrant than other options would be looked into.
2. The proposed 40' road easement would be required to be graded 28' width and a paved finished width of 24' for anything serving more than 2 homes. If the road will serve no more than 2 homes than the graded width would be required to be 24' and a paved finished width of 20' because of the length of the roadway.
3. In either roadway scenario an approved cul-de-sac or hammerhead turnaround would be required at the end of the roadway.
4. I can see what looks to be an existing roadway on Parcel 3 and going through Parcel 4. I can see contour lines that cause me some concern at no time will a slope of more than 20% be allowed. Any slope of over 15% will be required to be cemented with a brush finish.
5. The roadways that exceed 800' in length will be required to have approved turnouts every 400'.
6. Any home built will be required to be built with enhanced fire resistive construction.
7. A fire plan for this project will be required.
8. Any home built will have an automatic sprinkler system installed.
9. A minimum 100' fuel modification requirement will be in place for any structure built.

If I can be of further assistance on this matter please call me at (760) 788-2244 M-TH., 7:30a.m. to 4:00p.m.

FIRE SUPPRESSION-FIRE PREVENTION-RESCUE-PARAMEDIC SERVICE-HAZARDOUS MATERIALS RESPONSE

Sincerely,

Steve Delgadillo, Fire Marshal
Ramona Fire Department/CDF

FIRE SUPPRESSION-FIRE PREVENTION-RESCUE-PARAMEDIC SERVICE-HAZARDOUS MATERIALS RESPONSE

PROJECT FACILITY AVAILABILITY FORM

FIRE

Please type or use pen

Owner's Name Tim & Christine Neumann
Phone _____
Owner's Mailing Address 18489 Ramona View Drive
Street _____
City Ramona CA. 92065
State _____ Zip _____

ORG _____

ACCT _____

ACT _____

TASK _____

DATE 9-19-05 AMTS 10000

DISTRICT CASHIER'S USE ONLY

F

SECTION 1. PROJECT DESCRIPTION

TO BE COMPLETED BY APPLICANT

- A. ☐ Major Subdivision (TM) ☐ Specific Plan or Specific Plan Amendment
☒ Minor Subdivision (TPM) ☐ Certificate of Compliance:
Boundary Adjustment
Rezone (Reclassification) from _____ to _____ zone.
Major Use Permit (MUP), purpose: _____
Time Extension ... Case No. _____
Expired Map ... Case No. _____
Other _____

Assessor's Parcel Number(s)
(Add extra if necessary)

2	8	0	1	3	0	0	3

Thomas Bros. Page 1153 Grid B4

Project address 18489 Ramona View Drive

Ramona 92065
Community Planning Area/Subregion Zip

- B. ☒ Residential Total number of dwelling units 4
☐ Commercial Gross floor area _____
☐ Industrial Gross floor area _____
☐ Other Gross floor area _____

C. Total Project acreage 19.6 Total lots 4 Smallest proposed lot 4.7

OWNER/APPLICANT AGREES TO COMPLETE ALL CONDITIONS REQUIRED BY THE DISTRICT.

Applicant's Signature: _____ Date: 9-13-05

Address: 12320 Stowe Drive Suite E, Poway CA. 92064 Phone: 858-748-2130

(On completion of above, present to the district that provides fire protection to complete Sections 2 and 3 below.)

SECTION 2. FACILITY AVAILABILITY

TO BE COMPLETED BY DISTRICT

District name: RAMONA FIRE DEPT / CDF

Indicate the location and distance of the primary fire station that will serve the proposed project: 229 SAN VICENTE RD. APPROX 3 MI TO PROJECT.

- A. ☒ Project is in the District and eligible for service.
☐ Project is not in the District but is within its Sphere of Influence boundary, owner must apply for annexation.
☐ Project is not in the District and not within its Sphere of Influence boundary.
☐ Project is not located entirely within the District and a potential boundary issue exists with the _____ District.
B. ☒ Based on the capacity and capability of the District's existing and planned facilities, fire protection facilities are currently adequate or will be adequate to serve the proposed project. The expected emergency travel time to the proposed project is 5 minutes.
☐ Fire protection facilities are not expected to be adequate to serve the proposed development within the next five years.
C. ☒ District conditions are attached. Number of sheets attached: 2
☐ District will submit conditions at a later date.

SECTION 3. FUELBREAK REQUIREMENTS

Note: The fuelbreak requirements prescribed by the fire district for the proposed project do not authorize any clearing prior to project approval by the Department of Planning and Land Use.

- ☒ Within the proposed project 100 feet of clearing will be required around all structures.
☒ The proposed project is located in a hazardous wildland fire area, and additional fuelbreak requirements may apply.
Environmental mitigation requirements should be coordinated with the fire district to ensure that these requirements will not pose fire hazards.

This Project Facility Availability Form is valid until final discretionary action is taken pursuant to the application for the proposed project or until it is withdrawn, unless a shorter expiration date is otherwise noted. EXP 9-19-07

Authorized signature: _____ Fire name and title: SEAN DELEAVIN FIRE MARSHAL (760) 282-2244 Date: 9-19-05

On completion of Sections 2 and 3 by the District, applicant is to submit this form with application to:
Zoning Counter, Department of Planning and Land Use, 5201 Ruffin Road, San Diego, CA 92123

APPENDIX C
WEATHER DATA

BEHAVE Plus 3.0.1

Worst case sustained winds (10 minute average and peak) Fuel Model 1 at 50% slope

Zone	Period	Temperature	Relative Humidity	Sustained Wind Speed
Maritime	Summer	70-89°F	30-34%	17 mph
	Santa Ana	90-109°F	5-9%	18 mph
	Peak	90-109°F	5-9%	22 mph
Coastal	Summer	90-109°F	10-14%	19 mph
	Santa Ana	90-109°F	0-4%	21 mph
	Peak	90-109°F	0-4%	26 mph
Transitional	Summer	90-109°F	10-14%	19 mph
	Santa Ana	90-109°F	5-9%	28 mph
	Peak	90-109°F	5-9%	41 mph
Interior	Summer	90-109°F	5-9%	18 mph
	Santa Ana	90-109°F	5-9%	24 mph
	Peak	90-109°F	5-9%	56 mph
Desert	Summer	90-109°F	5-9%	18 mph
	Santa Ana	90-109°F	5-9%	24 mph
	Peak	90-109°F	5-9%	56 mph

APPENDIX D
FUEL MODELING

Fire Modeling For: NEUMANN PROPERTY TRM 209102Behave Version: 3.0.1Modeled by: S. Thorne

Parcel	Habitat	Fuel Model	Fuel Moisture	20-Ft Wind Speed MI/H	Wind Direction	Slope	Aspect	Flame Length (Ft)	Direction of Max Spread	Towards Structure (y/n)
3	Chemise Chaparral	SCAL 17	30%	28	45	-23	45	14.2	225	
4	"	"	"	41	"	"	"	18.0	11	
5	Coastal Sage Scrub	SCAL 18	"	19	225	40	225	25.7	45	
4	"	"	"	28	45	5	45	28.4	225	
4	"	"	"	41	"	"	"	33.3	11	
4	"	"	"	19	225	30	225	25.1	45	
3	chemise chaparral	SCAL 17	"	19	225	40	225	11.8	45	

n/a Ana

Peak

Summer

n/a Ana

Peak

Summer

Summer



Modules: SURFACE, SCORCH

Description Neumann-Parcel 3 Santa Ana, Chamise Chaparral

Fuel/Vegetation, Surface/Understory

Fuel Model SCAL17

Fuel Moisture

Dead Fuel Moisture % 3Live Fuel Moisture % 50

Weather

20-ft Wind Speed mi/h 28Wind Adjustment Factor 0.4Wind Direction (from north) deg 45Air Temperature oF 90, 109

Terrain

Slope Steepness % 0Aspect (from north) deg 45

Run Option Notes

Calculations are only for the direction of maximum spread [SURFACE].

Fireline intensity, flame length, and spread distance are always
for the direction of the spread calculations [SURFACE].

Wind and spread directions are degrees clockwise from north [SURFACE].

Wind direction is the direction from which the wind is blowing [SURFACE].

Output Variables

Surface Rate of Spread (maximum) (ch/h) [SURFACE]

Flame Length (ft) [SURFACE]

Direction of Maximum Spread (from north) (deg) [SURFACE]

Midflame Wind Speed (mi/h) [SURFACE]

Wind Adjustment Factor [SURFACE]

Wind/Slope/Spread Direction Diagram [SURFACE]

Fire Characteristics Chart [SURFACE]

Scorch Height (ft) [SCORCH]

(continued on next page)



Input Worksheet (continued)

Notes

The results of this run use fuel model SCAL 17, which represents the chamise chaparral onsite, a Santa Ana weather condition and a 28 MPH wind.



Neumann-Parcel 3 Santa Ana, Chamise Chaparral

Air Temp oF	ROS (max) ch/h	Flame Length ft	Direction Max ROS deg	Midflame Wind Speed mi/h	Wind Adj Factor	Scorch Height ft
90	115.7	14.2	225	11.2	0.4	140
109	115.7	14.2	225	11.2	0.4	227

Modules: SURFACE, SCORCH

Description Neumann-Parcel 3 Peak, Chamise Chaparral

Fuel/Vegetation, Surface/Understory

Fuel Model SCAL17

Fuel Moisture

Dead Fuel Moisture % 3Live Fuel Moisture % 50

Weather

20-ft Wind Speed mi/h 41Wind Adjustment Factor 0.4Wind Direction (from north) deg 45Air Temperature oF 90, 109

Terrain

Slope Steepness % 0Aspect (from north) deg 45

Run Option Notes

Calculations are only for the direction of maximum spread [SURFACE].

Fireline intensity, flame length, and spread distance are always
for the direction of the spread calculations [SURFACE].

Wind and spread directions are degrees clockwise from north [SURFACE].

Wind direction is the direction from which the wind is blowing [SURFACE].

Output Variables

Surface Rate of Spread (maximum) (ch/h) [SURFACE]

Flame Length (ft) [SURFACE]

Direction of Maximum Spread (from north) (deg) [SURFACE]

Midflame Wind Speed (mi/h) [SURFACE]

Wind Adjustment Factor [SURFACE]

Wind/Slope/Spread Direction Diagram [SURFACE]

Fire Characteristics Chart [SURFACE]

Scorch Height (ft) [SCORCH]

(continued on next page)

Input Worksheet (continued)

Notes

The results of this run use fuel model SCAL 17, which represents the chamise chaparral onsite, a Peak weather condition and a 41 MPH wind.



Neumann-Parcel 3 Peak, Chamise Chaparral

Air Temp oF	ROS (max) ch/h	Flame Length ft	Direction Max ROS deg	Midflame Wind Speed mi/h	Wind Adj Factor	Scorch Height ft
90	194.9	18.0	225	16.4	0.4	169
109	194.9	18.0	225	16.4	0.4	273

Modules: SURFACE, SCORCH

Description Neumann-Parcel 3 Summer, Coastal Sage Scrub

Fuel/Vegetation, Surface/Understory

Fuel Model SCAL18

Fuel Moisture

Dead Fuel Moisture % 3Live Fuel Moisture % 50

Weather

20-ft Wind Speed mi/h 19Wind Adjustment Factor 0.4Wind Direction (from north) deg 225Air Temperature oF 90, 109

Terrain

Slope Steepness % 40Aspect (from north) deg 225

Run Option Notes

Calculations are only for the direction of maximum spread [SURFACE].

Fireline intensity, flame length, and spread distance are always
for the direction of the spread calculations [SURFACE].

Wind and spread directions are degrees clockwise from north [SURFACE].

Wind direction is the direction from which the wind is blowing [SURFACE].

Output Variables

Surface Rate of Spread (maximum) (ch/h) [SURFACE]

Flame Length (ft) [SURFACE]

Direction of Maximum Spread (from north) (deg) [SURFACE]

Midflame Wind Speed (mi/h) [SURFACE]

Wind Adjustment Factor [SURFACE]

Wind/Slope/Spread Direction Diagram [SURFACE]

Fire Characteristics Chart [SURFACE]

Scorch Height (ft) [SCORCH]

(continued on next page)



Input Worksheet (continued)

Notes

The results of this run use fuel model SCAL 18, which represents the coastal sage scrub onsite, a Summer weather condition and a 19 MPH wind.



Neumann-Parcel 3 Summer, Coastal Sage Scrub

Air Temp oF	ROS (max) ch/h	Flame Length ft	Direction Max ROS deg	Midflame Wind Speed mi/h	Wind Adj Factor	Scorch Height ft
90	88.2	25.7	45	7.6	0.4	428
109	88.2	25.7	45	7.6	0.4	690

Modules: SURFACE, SCORCH

Description	Neumann-Parcel 3 Summer, Chamise Chaparral		
Fuel/Vegetation, Surface/Understory			
Fuel Model	SCAL17		
Fuel Moisture			
Dead Fuel Moisture	%	3	
Live Fuel Moisture	%	50	
Weather			
20-ft Wind Speed	mi/h	19	
Wind Adjustment Factor		0.4	
Wind Direction (from north)	deg	225	
Air Temperature	oF	90, 109	
Terrain			
Slope Steepness	%	40	
Aspect (from north)	deg	225	

Run Option Notes

Calculations are only for the direction of maximum spread [SURFACE].

Fireline intensity, flame length, and spread distance are always for the direction of the spread calculations [SURFACE].

Wind and spread directions are degrees clockwise from north [SURFACE].

Wind direction is the direction from which the wind is blowing [SURFACE].

Output Variables

Surface Rate of Spread (maximum) (ch/h) [SURFACE]

Flame Length (ft) [SURFACE]

Direction of Maximum Spread (from north) (deg) [SURFACE]

Midflame Wind Speed (mi/h) [SURFACE]

Wind Adjustment Factor [SURFACE]

Wind/Slope/Spread Direction Diagram [SURFACE]

Fire Characteristics Chart [SURFACE]

Scorch Height (ft) [SCORCH]

(continued on next page)



Input Worksheet (continued)

Notes

The results of this run use fuel model SCAL 17, which represents the chamise chaparral onsite, a Summer weather condition and a 19 MPH wind.



Neumann-Parcel 3 Summer, Chamise Chaparral

Air Temp oF	ROS (max) ch/h	Flame Length ft	Direction Max ROS deg	Midflame Wind Speed mi/h	Wind Adj Factor	Scorch Height ft
90	77.6	11.8	45	7.6	0.4	123
109	77.6	11.8	45	7.6	0.4	198



Modules: SURFACE, SCORCH

Description	Neumann-Parcel 4 Peak, Coastal Sage Scrub		
Fuel/Vegetation, Surface/Understory			
Fuel Model			SCAL18
Fuel Moisture			
Dead Fuel Moisture	%	3	
Live Fuel Moisture	%	50	
Weather			
20-ft Wind Speed	mi/h	28	
Wind Adjustment Factor		0.4	
Wind Direction (from north)	deg	45	
Air Temperature	oF	90, 109	
Terrain			
Slope Steepness	%	5	
Aspect (from north)	deg	225	

Run Option Notes

Calculations are only for the direction of maximum spread [SURFACE].

Fireline intensity, flame length, and spread distance are always for the direction of the spread calculations [SURFACE].

Wind and spread directions are degrees clockwise from north [SURFACE].

Wind direction is the direction from which the wind is blowing [SURFACE].

Output Variables

Surface Rate of Spread (maximum) (ch/h) [SURFACE]

Flame Length (ft) [SURFACE]

Direction of Maximum Spread (from north) (deg) [SURFACE]

Midflame Wind Speed (mi/h) [SURFACE]

Wind Adjustment Factor [SURFACE]

Wind/Slope/Spread Direction Diagram [SURFACE]

Fire Characteristics Chart [SURFACE]

Scorch Height (ft) [SCORCH]

(continued on next page)



Input Worksheet (continued)

Notes

The results of this run use fuel model SCAL 18, which represents the coastal sage scrub onsite, a Santa Ana weather condition and a 28 MPH wind.



Neumann-Parcel 4 Peak, Coastal Sage Scrub

Air Temp of	ROS (max) ch/h	Flame Length ft	Direction Max ROS deg	Midflame Wind Speed mi/h	Wind Adj Factor	Scorch Height ft
90	110.2	28.4	225	11.2	0.4	474
109	110.2	28.4	225	11.2	0.4	764



Modules: SURFACE, SCORCH

Description Neumann-Parcel 4 Peak, Coastal Sage Scrub

Fuel/Vegetation, Surface/Understory

Fuel Model SCAL18

Fuel Moisture

Dead Fuel Moisture % 3Live Fuel Moisture % 50

Weather

20-ft Wind Speed mi/h 41Wind Adjustment Factor 0.4Wind Direction (from north) deg 45Air Temperature oF 90, 109

Terrain

Slope Steepness % 5Aspect (from north) deg 225

Run Option Notes

Calculations are only for the direction of maximum spread [SURFACE].

Fireline intensity, flame length, and spread distance are always
for the direction of the spread calculations [SURFACE].

Wind and spread directions are degrees clockwise from north [SURFACE].

Wind direction is the direction from which the wind is blowing [SURFACE].

Output Variables

Surface Rate of Spread (maximum) (ch/h) [SURFACE]

Flame Length (ft) [SURFACE]

Direction of Maximum Spread (from north) (deg) [SURFACE]

Midflame Wind Speed (mi/h) [SURFACE]

Wind Adjustment Factor [SURFACE]

Wind/Slope/Spread Direction Diagram [SURFACE]

Fire Characteristics Chart [SURFACE]

Scorch Height (ft) [SCORCH]

(continued on next page)



Input Worksheet (continued)

Notes

The results of this run use fuel model SCAL 18, which represents the coastal sage scrub onsite, a Peak weather condition and a 41 MPH wind.



Neumann-Parcel 4 Peak, Coastal Sage Scrub

Air Temp of	ROS (max) ch/h	Flame Length ft	Direction Max ROS deg	Midflame Wind Speed mi/h	Wind Adj Factor	Scorch Height ft
90	155.7	33.3	225	16.4	0.4	550
109	155.7	33.3	225	16.4	0.4	887

Modules: SURFACE, SCORCH

Description Neumann-Parcel 4 Summer, Coastal Sage Scrub

Fuel/Vegetation, Surface/Understory

Fuel Model SCAL18

Fuel Moisture

Dead Fuel Moisture % 3Live Fuel Moisture % 50

Weather

20-ft Wind Speed mi/h 19Wind Adjustment Factor 0.4Wind Direction (from north) deg 225Air Temperature oF 90, 109

Terrain

Slope Steepness % 30Aspect (from north) deg 225

Run Option Notes

Calculations are only for the direction of maximum spread [SURFACE].

Fireline intensity, flame length, and spread distance are always
for the direction of the spread calculations [SURFACE].

Wind and spread directions are degrees clockwise from north [SURFACE].

Wind direction is the direction from which the wind is blowing [SURFACE].

Output Variables

Surface Rate of Spread (maximum) (ch/h) [SURFACE]

Flame Length (ft) [SURFACE]

Direction of Maximum Spread (from north) (deg) [SURFACE]

Midflame Wind Speed (mi/h) [SURFACE]

Wind Adjustment Factor [SURFACE]

Wind/Slope/Spread Direction Diagram [SURFACE]

Fire Characteristics Chart [SURFACE]

Scorch Height (ft) [SCORCH]

(continued on next page)



Input Worksheet (continued)

Notes

The results of this run use fuel model SCAL 18, which represents the coastal sage scrub onsite, a Summer weather condition and a 19 MPH wind.



Neumann-Parcel 4 Summer, Coastal Sage Scrub

Air Temp oF	ROS (max) ch/h	Flame Length ft	Direction Max ROS deg	Midflame Wind Speed mi/h	Wind Adj Factor	Scorch Height ft
90	83.7	25.1	45	7.6	0.4	413
109	83.7	25.1	45	7.6	0.4	665